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**APPLICATION FOR UNITED STATES LETTERS PATENT**  
**FOR**  
**LOGISTICS HANDLING ROLLER TRACK STAND**

Specification: 25 Total Pages including Claims & Abstract  
Claims: 20 Total Claims including 3 Independent and 17 Dependent Claims  
Drawings: 4 Figures in 1 Drawing Sheet

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## **TECHNICAL FIELD**

This invention relates to utility stands that are used to assist and stabilize a working platform surface for personnel working in logistics materiel handling applications, which personnel must stand on and move about floor-mounted and raised roller tracks and conveyors while the personnel are moving, working with, rigging, and securing loads in intermodal and other types of ground, sea, and air cargo handling, transportation, movement, and storage equipment and facilities, which equipment and facilities include, for purposes of example without limitation, containers, lockers, warehouses, trucks, lifts, cranes, trains, sea vessels, aircraft, and related equipment and facilities.

## **BACKGROUND OF THE INVENTION**

For as long as roller track and conveyor assemblies have been used by personnel involved in the handling, movement, transportation, storage, and delivery of commercial and consumer materiel such as goods and products, there has been a need for such personnel to stand upon, move about, and work on top of such roller tracks. This can be a potential hazard in that it is a challenge for the worker or user to maintain balance and to avoid falls when standing on such moving and movable roller and conveyor track systems.

Many attempts have been made to devise foot wear, platforms, and combinations thereof that can be used to establish a stable and firmly immovable and generally flat working surface, and in some cases portable and easily movable flat surface, that enables the worker to stand about and upon such roller and conveyor track systems while handling such materiel without the need

for cumbersome foot wear and heavy or unwieldy platform support and stand devices that can establish a stable and firm surface on top of the movable track and roller system that can support the worker or user during handling of the materiel.

Many such as roller track and conveyor assemblies and systems are described in the prior art and include, for purposes of example, U.S. Pat. Nos. 2,593,089 to Barry, which is restricted to a roller conveyor construction; 2,594,295 to Cushman whose invention is limited to a reversible conveyor; 3,447,665 to Egeland et al. who describe a movable flooring system; 3,612,316 to Baldwin et al., which is limited to a retractable roller-type cargo load carrier; 4,345,869 to King, who restricts his invention to a movable conveyor system; 4,467,612 to Weasel, Jr., which is limited to a removable pallet floor device; 4,549,844 to Miller, whose invention is restricted to retractable roller-type roller bed vehicles; 5,026,243 to Dell, whose invention is limited to a portable unloading platform that is secured with brackets to a vehicle; and 5,556,249 to Heine, whose invention is restricted to a cargo loading system having a movable sled and platform.

Each of these references are just an example of the many attempts in the prior art and are each incorporated herein by reference in their entirety. Some of such attempts have attempted to stabilize the roller or moving surface by either immobilizing the surface, or by incorporating retractable rollers or roller devices and the like that can be retracted into a support or floor surface during non-use so as to stabilize portions of the surface.

In the instances where such retractable rollers are employed, a problem remains in that the recesses formed in the floor can create trip points and an uneven floor surface that can destabilize the worker or user during movement. Other attempts that have included moving surfaces that can be immobilized, are often belt and roller combinations that require substantially flexible

belts. The problem with these types of systems is that the generally flexible belts do not establish a firm support surface even when the belt and underlying rollers are immobilized. Many other attempts to solve the problems in the art have incorporated various combinations of such systems and devices and have yet to establish an easy to use, lightweight, low-cost, and stable support surface that is compatible for use with a variety of such support systems.

What has been needed but heretofore unavailable is an easily maneuverable, easy to store and position, competitively priced and simple in design to fabricate, yet stable support surface, that can be used by a wide variety of workers and users, and which is compatible for adaptation and use with many legacy roller and track assemblies and systems presently in use in the industry. The instant invention accomplishes such capabilities with new and innovative devices that have wide compatibility with many such legacy track and roller systems and devices. In establishing such new capabilities, the instant invention solves many of the problems that have long-plagued the prior art and meets the long felt needs of those having skill and experience in the relevant arts. Such novel solutions are described in the context of the accompanying figures, detailed description of the invention, and the claims.

### **SUMMARY OF INVENTION**

Even in its most general configuration, the device according to the principles of the instant invention advances the state of the art and confronts the problems and difficulties with the previous technology with new and novel capabilities that establish much improved and more capable devices that have long been needed by worker and users of logistics handling and conveying equipment and systems. In one of the many preferable configurations of the

embodiments of the invention, a logistics handling roller and conveyor track stand is contemplated that can be used for more convenient operation of a logistics handling roller and conveyor track. Such a prior art logistics handling roller and conveyor track typically incorporates a pattern of roller and conveyor components that includes, among other elements and features, roller elements that define spaced apart interstices between the rollers and other components.

The preferred inventive logistics handling roller and conveyor track stand is directed to, among other features and components, a generally planar platform that is sized to support a user or a worker having a need to stand upon the logistics handling roller and conveyor track device, system, and or assembly for purposes of handling materiel and perhaps securing such thereto for transit of the materiel. Ordinarily, the operational requirement to move, adjust the position of, and to secure such materiel loads requires the user or worker to be supported by a firm working surface that will not move as the materiel loads are adjusted and secured. As a result, the worker or user is forcibly adjusting, securing, and loosening such loads and is thereby inducing reaction loads through his or her feet against the supporting surface or floor of the logistics handling roller and conveyor track components, which would possibly move and destabilize the worker or user, and which makes it difficult to engage the materiel load for such activities.

Accordingly, those with skill in the art should be able to appreciate that the inventive track stand must be preferably formed from a durable and resilient material that forms the platform to have a thickness that is selected so that the resultant platform is substantially rigid when it is subjected to such operational loading conditions. In this way, when the track stand is

placed upon the logistics handling roller and conveyor device, system, and or assembly, it will not be damaged under the forces of such uses.

The platform portion of the logistics handling roller and conveyor track stand also preferably incorporates one or more stacking recesses. The recesses can be integrally formed in the platform of the same or similar material about a superior or generally upwardly positioned face of the platform. When more than one such stacking recesses are incorporated, they are preferably spaced apart from one another as may be desired by various application considerations as will be further apparent to those skilled in the art with continued reference to the following detailed description of the invention.

At least one generally inferiorly projecting engagement shear boss is also formed in the platform and preferably about a generally downwardly or inferiorly directed face on the opposite side of the platform. Each such boss is also preferably positioned to generally register with a respective and corresponding one of the one or more stacking recesses. When so positioned, the bosses are also each preferably sized to be received within the one or more registered stacking recesses of another track stand when the track stand is stacked against the other track stand. When at least two such corresponding and co-registered bosses are incorporated, even more preferably improved stacking capability can be established.

Further, in configurations having two or more such bosses incorporated about each platform, the bosses are preferably spaced apart to also register with and to engage the interstices defined by the components of the logistics handling roller and conveyor devices, assemblies, and systems so as to establish a stable working and support surface that is prevented from moving when the inventive track stand is placed upon the logistics handling roller and conveyor track.

Any of the preceding embodiments, variations, modifications, and alternative arrangements can be further adapted wherein the recesses can also include a respective and offset depression that is recessed inferiorly from the superior face and relative to the respective recess. The depression can be preferably smaller in cross-sectional area to that of the recess if desired.

5 In such additional preferred alternative embodiments, the logistics handling roller and conveyor track stand also can preferably incorporate the engagement shear boss to further encapsulate a reinforcing member that is designed to and which functions to increase the shear strength of the boss. This modified preferred configuration can significantly increase the operational loads to which the platform can be subjected when in use. Even more preferably, the offset depression is  
10 sized to receive the reinforcing member modified engagement shear boss.

Further modifications to the various embodiments can also include an inferiorly projecting post that is formed in the engagement shear boss, and which is sized to be received within a corresponding offset depression of another track stand when at least two such track stands are stacked against one another. In this way, the additionally contemplated features can be  
15 nested together with corresponding features and elements of adjacently stacked track stands, which minimizes the storage space required for the stands when not in use.

The instant invention is also directed to variations of any of the preceding embodiments wherein the platform is formed with two sets of registered recesses and bosses as well as three and four of such sets. It has been found that in configurations of the instant invention having  
20 fewer such engagement shear bosses, that the overall outside average dimensions of the shear bosses must be increased, which the dimensions can be decreased as the number of such shear bosses is increased. All of such contemplated configurations can have advantages and the

desired number of such elements and features will depend upon the desired performance characteristics sought for the particular operational application.

In even more preferable configurations and adaptations of any of the preceding embodiments, the platform may also be formed to define one or more handle apertures that can  
5 be formed anywhere about the platform surfaces and which is adapted to improve the ease with which the track stand can be handled, positioned, and moved from position to position during operation. More preferably, the handle aperture is formed close or proximate to a peripheral edge of the platform. Even more preferably, such handle apertures are formed about each peripheral  
10 edge of the platform so as to maximize the possible gripping points that a worker or user may employ for positioning and storing the contemplated logistics handling roller and conveyor track stand. In various storage applications, such handling apertures can also be used to hang the track stand against a wall when not in use.

For even more improved support capabilities, the invention may also be modified in another preferred alternative configuration that is adapted to incorporate one or more high-  
15 friction grip elements that can preferably be formed or incorporated upon the superior and or inferior faces of the platform of the track stand. Such grip elements can be formed from any of a number of possible materials that can include plasticized or rubberized materials as well as roughened strips of material, which can be used either alone or combination with one another and with other similarly capable traction improving materials and devices.

20 The instant invention is susceptible to fabrication from types of materials that are known to be compatible for use with many various operational applications. Such operational applications can require if not even dictate the most desirable material or materials that are to be



used to fabricate the new and novel track stand. Such materials may need to be compatible for use in harsh chemical environments as well as under high wear and tear operational conditions. While many such materials are available and have been found to be particularly well-suited for purposes of the devices according to the principles of the instant invention, the platform and the

5 plurality of engagement shear bosses can preferably be formed from a material that can be selected from the group that includes woods; metals including diamond plate finished steels; natural and synthetic resin and fiber based composite materials; monomeric and polymeric thermoset and thermoformed plastics; and powdered, machined, drawn, stamped, rolled, extruded, and forged thermoplastics; as well as acetal resins, delrins, fluorocarbons, polyesters,

10 polyester elastomers, metallocenes, polyamides, nylon, polyvinyl chloride, high-density polyethylenes and polypropylenes, polybutadienes, high-durometer rated natural and synthetic rubbers, silicone resins, ABS (acrylonitrile, butadiene, styrene), liquid crystal polymers; and alloys and combinations and mixtures and composites thereof, and reinforced alloys and combinations and mixtures and composites thereof. In selecting the particular material and or

15 materials that are desired for use, those skilled in the art will consider various factors that include desired weight of the inventive track, strength and durability, compatibility for use in electrically sensitive environments, as well as suitability for use in harsh agent environments.

While the instant invention contemplates that the logistics handling roller and conveyor track stand platform and the engagement shear bosses can be formed from dissimilar materials,

20 the invention is also directed to modifications and alternatively configured preferred embodiments wherein the platform and or the bosses and or the posts are integrally formed from the same material.

These variations, modifications, and alterations of the various preferred embodiments may be used either alone or in combination with one another as can be better understood by those with skill in the art with reference to the following detailed description of the preferred embodiments and the accompanying figures and drawings.

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### **BRIEF DESCRIPTION OF THE DRAWINGS**

Without limiting the scope of the present invention as claimed below and referring now to the drawings and figures, wherein like reference numerals, and like numerals with primes, across the several drawings, figures, and views refer to identical, corresponding, or equivalent elements, components, features, and parts:

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FIG. 1 is an elevated perspective view, in reduced scale, of a prior art roller and conveyor track stand;

FIG. 2 is an elevated perspective view, in reduced scale, of a logistics handling roller and conveyor track stand according to the principles of the instant invention;

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FIG. 3 is a side elevation view, in reduced scale, of two of the logistics handling roller and conveyor track stands of FIG. 1 in a stacked and nested storage configuration; and

FIG. 4 is a side elevation view, in enlarged scale, of a component of the track stand embodiments of FIGS. 2 and 3.

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Also, in the various figures and drawings, various reference symbols and letters may be used to identify significant features, dimensions, objects, and arrangements of elements described herein below in connection with the several figures and illustrations.

## DESCRIPTION OF THE PREFERRED EMBODIMENT

In a wide range of possible embodiments, alternative configurations and arrangements, and in the contemplated modifications and variations thereof, the portable logistics handling roller and conveyor track stand according to the features and capabilities of the invention establishes an innovative and previously unavailable platform that establishes a fixed, stable, and easy-to-use work and support surface that materiel, freight, and goods handling users, workers, and personnel can employ with confidence and comfort.

With reference now to the various illustrations and particularly to FIG. 1, a prior art track support surface **S** is shown that was known to be formed from a section of a plywood material **P** and which incorporated 2 bolts **B** used to engage interstices that were defined between components of the prior art logistics handling roller, conveyor, and track assemblies. The many problems with such prior art support surfaces such as surface **S** included that the material did not offer a reasonably durable or long-lasting platform surface, the known and contemplated configurations thereof were not widely compatible for use with most of the present-day and legacy roller, conveyor, and track devices and assemblies (not shown but described in detail in the prior art references described hereinabove), the bolts were easily dislodged from the support surface **S** even under small and nominal loading conditions, and it was found by those skilled in the art to be unwieldy to handle and especially difficult to store when not in use.

With continued reference to FIG. 1, and now also to FIGS. 2, 3, and 4, those having knowledge and skill in the relevant fields of technology may be able to appreciate the many innovations available by the embodiments contemplated by the features and capabilities of the

instant invention. As shown in FIGS. 2 and 3, a conveniently, storable and readily portable logistics handling roller and conveyor track stand **100** is depicted that is adapted for installation into and onto any of a number of legacy and present-day conveyor, track, and roller-type logistics handling systems (not shown but well known to those skilled in the art as is described above generally in connection with U.S. Pat. Nos. 2,593,089 to Barry; 2,594,295 to Cushman; 3,447,665 to Egeland et al.; and 3,612,316 to Baldwin et al., and others). Such prior art devices are shown in many of these and the other above-described patents.

The new and novel logistics handling roller and conveyor track stand **100** preferably incorporates, among other features and components, a generally planar platform **105** that is sized to support a user or a worker. Such personnel have a need for a stable, firm, and immobilized support surface that will not move or become displaced when the worker or user is engaged in, among other activities, handling materiel and securing such for transit, and for handling and removing the materiel after delivery.

As reflected in the figures, the platform **105** of the track stand **100** is formed from a durable and resilient material **110** that is fabricated to give the platform **105** a thickness **115** that is selected so that the resultant platform **105** is substantially rigid when it is loaded with the static and dynamic loads experienced under operational activities. Therefore, when the track stand **100** is positioned upon the legacy or present-day logistics handling roller and conveyor device, system, and or assembly, such as those in intermodal transportation trailers, the stand **100** will not be distorted or otherwise damaged from the transient and static operational loads imparted by the worker or user. The platform **105** is formed to preferably be substantially planar in shape and

to have a generally superiorly or upwardly facing side, surface, or face **120**, and an oppositely and generally inferiorly or downwardly facing side, surface, or face **125**.

The platform portion **105** of the logistics handling roller and conveyor track stand **100** also incorporates preferably one, or more preferably more than one, and even more preferably 3  
5 or more stacking recesses **130**. The stacking recesses **130** can be defined in the platform **105** and formed from any of a number of materials and or components, and combinations thereof, and can also preferably be integrally formed and defined as part of or in the platform **105** of the same or similar durable material **110**. Although many possible configurations are contemplated, the recesses are depicted in the figures for purposes of illustration but not for purposes of limitation,  
10 as being formed in and about the superior or generally upwardly positioned face **120** of the platform **105**.

In the configuration reflected in FIGS. 2 and 3, 4 stacking recesses **130** are shown to be spaced apart from one another by distances, designated generally by reference letters **H** and **V** (FIGS. 2, 3). The stacking recesses **130** are depicted in FIGS. 2 and 3, for purposes of  
15 illustration only and not for purposes of limitation, in an arrangement that is adapted to be compatible for use with a number of present day and legacy intermodal-type materiel conveying and transportation trucks and trailers (not shown but within the knowledge of those with relevant skills and expertise).

The instant invention also contemplates embodiments of the track stand **100** that is  
20 further adapted wherein any one or all of the stacking recesses **130** can further define and incorporate a respective and offset depression **135** that is recessed or offset in an inferior direction from the superior face **120**. The offset depression is offset from and projects inferiorly

or downwardly into the platform **105** relative to the respective stacking recess **130**. The offset depression **135** can be adapted to have the same shape and dimension of the respective **130**, as well as to be preferably smaller in cross-sectional area to that of the stacking recess **130** as may be preferred for any of a number possibly desirable applications and configurations.

5           The preferred logistics handling roller and conveyor track stand **100** also incorporates at least one generally inferiorly projecting engagement shear boss **140** formed about the face **125**. The engagement shear boss **140** may be formed from a dissimilar material from that of the platform **105**, and may also be integrally formed in the platform **105** to be of the same material **115**. The engagement shear boss or bosses **140** is / are also preferably positioned to generally  
10       register with a respective and corresponding one of the one or more stacking recesses **130**. When positioned to register with a corresponding stacking recess **130**, the bosses **140** are also each preferably sized to be received within the one or more registered stacking recesses **130** of another track stand **100'** (FIG. 3) as depicted in FIG. 3 by stacked arrangement **200**, when the track stand **100** is stacked against the other track stand **100'**.

15           Any of the preceding variations, modifications, and alternative arrangements of the preceding embodiments may also be further adapted to incorporate an inferiorly projecting post **145** that can preferably be formed as part of or in the engagement shear boss **140**. The post **145** can be preferably positioned to register with and to be sized for receipt within the corresponding offset depression **135** of the other track stand **100'** when at least two such track stands **100, 100'**  
20       are stacked against one another as in configuration **200** of FIG. 3. In this alternative configuration, the post **145** and the offset depression **135** can preferably be thereby nested together to minimize the storage space required for the stands when not in use.

An increased strength and operational load capability can be established for various alternative, modified, and varied arrangements of the embodiments of the invention wherein the engagement shear boss **140** is configured to be formed with and or to encapsulate a reinforcing member **150** (shown in dashed, hidden lines in FIGS. 2 & 3). The reinforcing member can be any of a number of possibly strengthening elements, including a steel, composite, or other similarly high-strength material adapted to have the shape or cross-sectional profile of the boss **140** and which can impart increased shear strength to the projecting engagement shear boss **140**.

Although shown generally in FIG. 4, those skilled in the art may be able to further comprehend that the contemplated reinforcing member **150** can be further adapted as a shear stress diffuser or load transfer reinforcing element that incorporates stress distribution elements such as flange or other similar feature. For purposes of further illustration without limitation, FIG. 4 illustrates an enlarged scale and side view profile of the contemplated stress distribution feature **155**, which would be integrally formed or embedded into or onto the generally planar section of the platform **105**. With such additional features **155**, the reinforcing member **150** can distribute the forces imparted upon the engagement shear bosses **140** during operational loading conditions away from the point stress locations immediately proximate to where the shear bosses **140** are joined to the platform **105**.

The various alternative configurations and modified embodiments of the novel track stand **100** also contemplate additional features and elements that can further improve ease use in operation as well as improve flexibility in storage. In this regard, the platform **105** may further modified to include one or more handle apertures **160** that can be formed anywhere about the platform **105** surfaces **120**, **125**. More preferably, the apertures **160** are defined to be proximate

to a peripheral edge 165 of the platform 105. Even more preferably, handle apertures 160 are formed about each peripheral edge 165 of the platform 105 to optimize the handling and positioning flexibility of the track stand 100.

Further modifications and variations of any of the preceding embodiments can also  
5 incorporate one or more high-friction grip elements 170 that may preferably be applied to, integrally formed on, and or incorporated upon the superior and or inferior faces 120, 125 of the platform 105 of the track stand 100. The grip elements 170 may be formed from any of a number of possible materials that can include plasticized or rubberized materials as well as roughened  
10 strips of material such as that used to increase friction on, among other applications, stair steps and flooring surfaces. The contemplated gripping elements 170 are contemplated for use either alone or combination with one another and with other similarly capable traction improving materials and devices. Various placards and usage data and indicia 180 (FIG. 2) can also be included on one or more surfaces 120, 125 of the platform 105 of the stand 100.

Although not susceptible to clear illustration in the accompanying black and white figures  
15 and drawings, the instant invention is also directed to variations and modifications of any of the preceding embodiments that are directed to the durable and resilient material 110 being selected to have predetermined color and or colors that can be employed either alone or in combination with the contemplated indicia 180. More particularly, the material 110 may be selected to be, for purposes of illustration without limitation, bright yellow for configurations that are compatible  
20 for use with one specific legacy conveyor, roller, and or track apparatus or system. In yet other configurations of the inventive track stand, other colors may be implemented in material 110 to assist personnel in differentiating differently configured track stands from one another. In



addition to using color coding to discriminate between various dimensional configurations, for purposes of further example but not for purposes of limitation, such color schema may also be employed to communicate various load capacities, susceptibility for use in various electrostatically sensitive environments, and as well as compatibility for use with various environmental substances such as petroleum fluids and other harsh substances, which may only be compatible for use with certain types of materials that are available to fabricate the contemplated track stands **100, 100'**. With each of these additional capabilities, those skilled in the art may further comprehend that the instant invention has even wider compatibility than previously set forth herein.

Numerous alterations, modifications, and variations of the preferred embodiments disclosed herein would be apparent to those skilled in the art and they are all contemplated to be within the spirit and scope of the instant invention, which is limited only by the following claims. For example, although specific embodiments have been described in detail, those with skill in the art can understand that the preceding embodiments and variations can be modified to incorporate various types of substitute and/or additional materials, relative arrangements of components, features, elements, and dimensional configurations for compatibility with the wide variety of possible logistics, handling, and movable track, conveyor, and roller systems that have been and which are in use throughout the industry. Accordingly, even though only few such embodiments, alternatives, variations, and modifications of the present invention are described herein, it is to be understood that the practice of such additional modifications and variations and the equivalents and kit-type combinations thereof, are within the spirit and scope of the roller and conveyor track stand and platform invention as it is defined in the following claims.